COMPUTERNEWS

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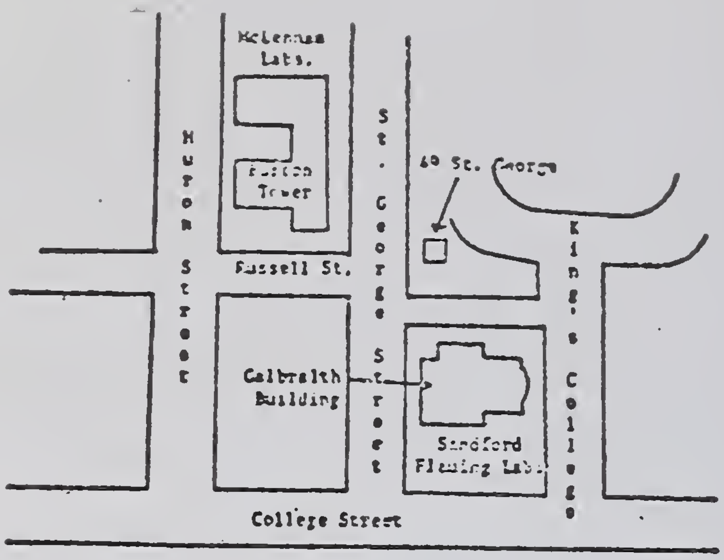
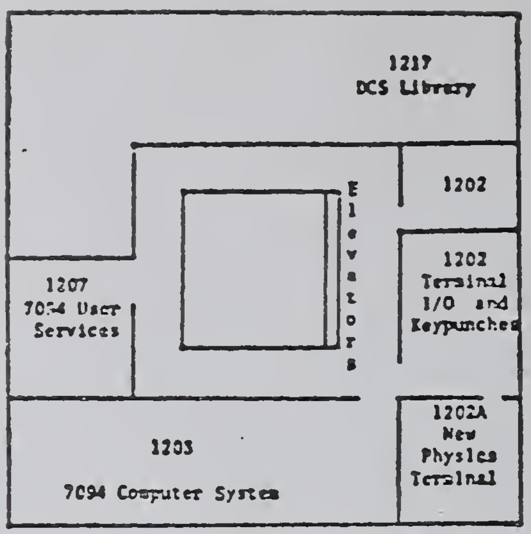
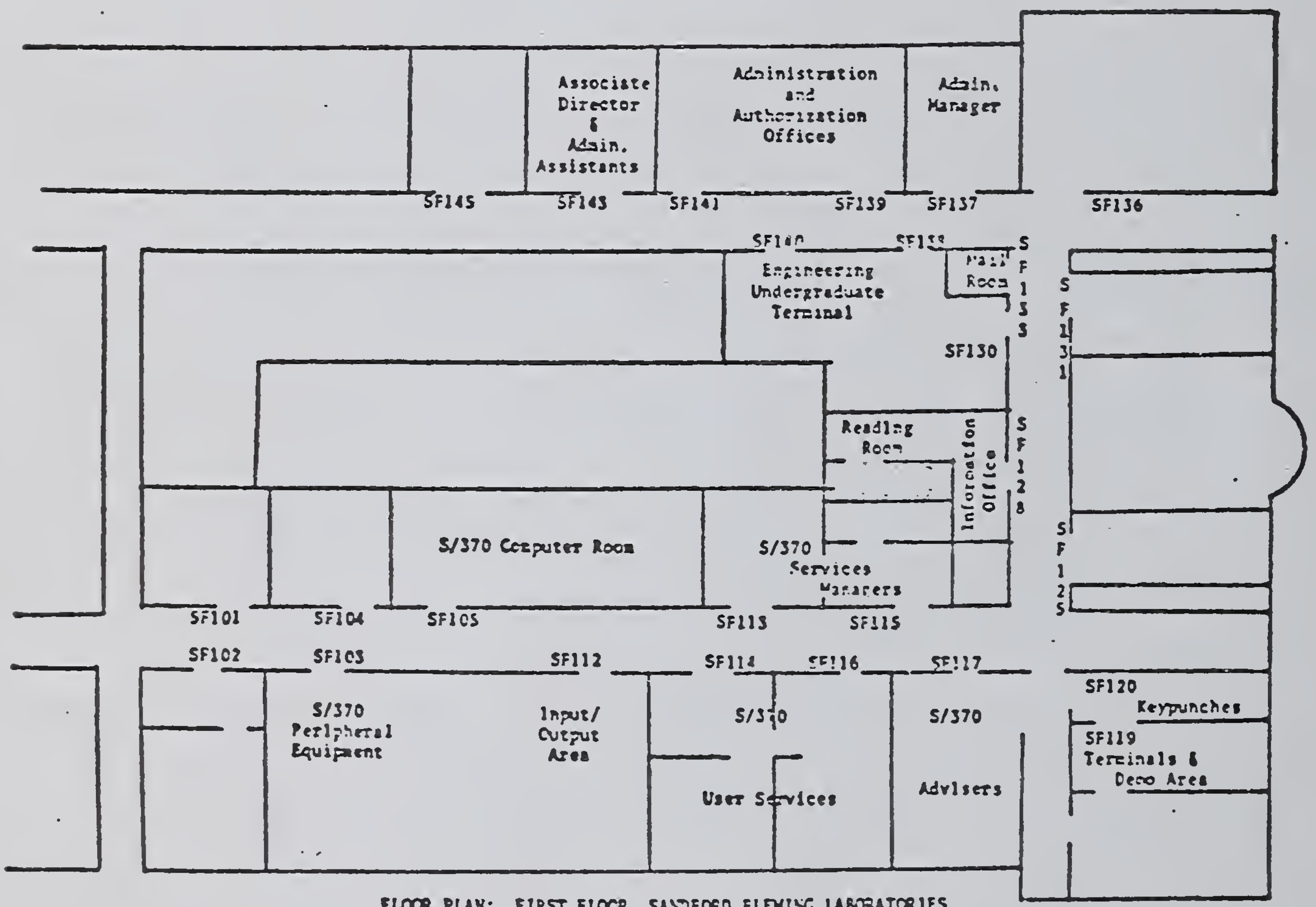


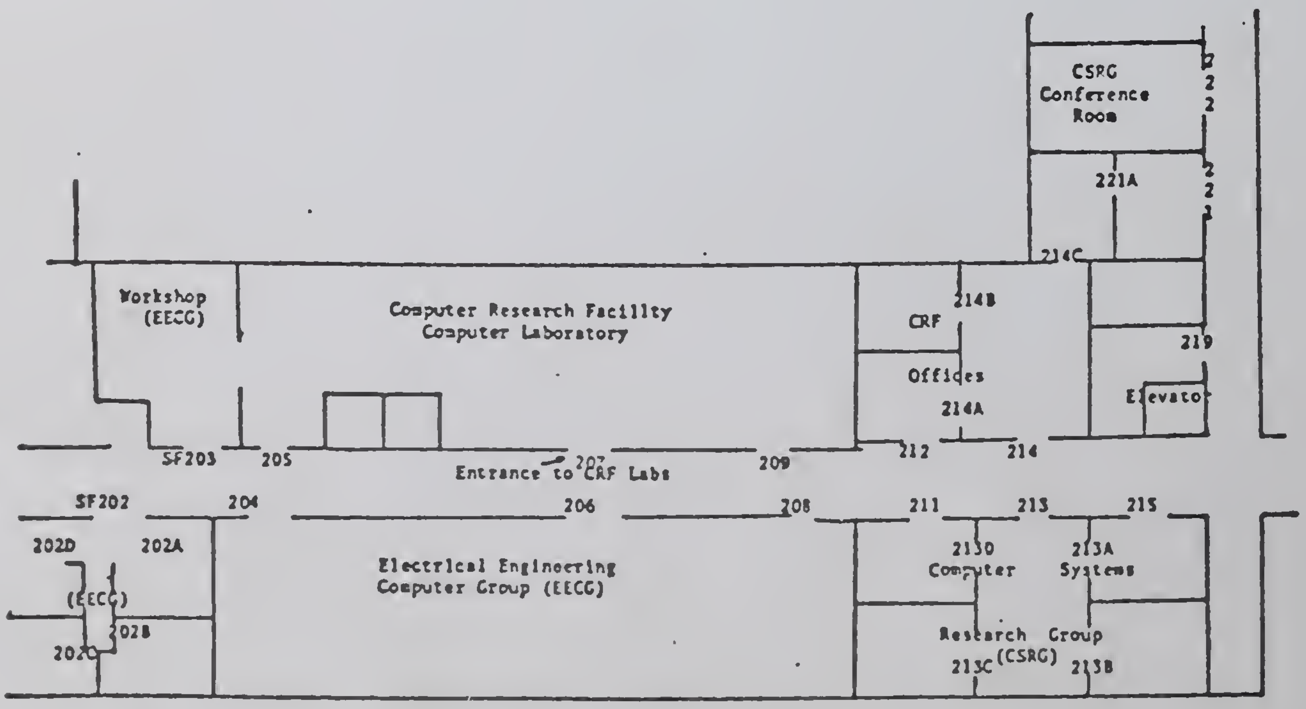


FLOOR PLAN: TWELFTH FLOOR, BURTON TOWER

UNIVERSITY OF TORONTO COMPUTER CENTRE



FLOOR PLAN: FIRST FLOOR, SANDFORD FLEMING LABORATORIES



FLOOR PLAN: SECOND FLOOR, SANDFORD FLEMING LABORATORIES

SHARE IN CHICAGO

SHARE is an IBM user organization which meets twice a year to discuss problems in managing, operating, implementing and installing IBM computer systems.

SHARE XLIII was held in late August in Chicago, Illinois and was attended by several UTCC staff members. Although most of the presentations were of a technical nature, there were two topics of general interest: the presentation of the SILT report and the presentation of VS2 Release 2 user experiences.

In March 1973, SHARE appointed a task force to identify the problems which the Data Processing industry is likely to face in the 1980-1985 time period. The committee report predicted a crisis in the ability of the Data Processing industry to meet the needs of user requirements with the current level of software technology.

Some of the specific requirements foreseen for future systems were: "black-box" software modules with precisely defined user exits and interfaces; highly reliable systems; computer systems services which can be used by non-computer oriented users. These problems have been recognized by the Computer Science academic community for some time and have now filtered down to the Data Processing community responsible for supplying computer services.

The written report by the SILT task force should provide interesting reading and will be available in the near future.

There were several sessions reporting user experiences with VS2 Release 2. All users found VS2 Release 2 extremely reliable. One installation reported that VS2 Release 2 had not crashed since they started running it in May. The major differences between MVT and VS2 Release 2 are internal to the operating system. As a result, installations found that the conversion to VS2 Release 2 was relatively transparent to their users. It was discovered that outside of IBM itself UTCC conducted the most thorough evaluation of VS2 Release 2 performance. Most installations were concerned primarily with implementing VS2 Release 2 systems compatible with their current production systems and had not yet had the opportunity to evaluate VS2 Release 2 performance. Other installations' experience with VS2 Release 2 was very similiar to that of UTCC, and IBM performance results for VS2 Release 2 coincided with the results of the UTCC evaluation.

Most installations which had decided to implement Virtual Storage systems had already converted to VS2 Release 1.6 and were resting before their next conversion to Release 2. There was a great deal of interest in VS2 Release 2 and all the sessions were well attended.

Rein Mikkor

EDUCOM CONFERENCE

The 1974 EDUCOM Fall Conference is being held at the Inn on the Park Hotel in Don Mills, October 16 - 18, 1974. EDUCOM is a North American organization of educational institutions interested in computer communications and resource sharing. The conference, which will be of interest to both administrators and academics in post-secondary education, is titled, "North American Perspective: Computing and Networks in Canada and the United States". The papers, panels and discussion groups form a logical sequence of sessions that explore various aspects of communications technology, applications of computing in instruction, computer networking and applications of computing for administrative functions.

Highlights of the conference will include a keynote address by George Glaser, AFIPS President, and a banquet address by Gordon B. Thompson of Bell Northern Research.

Hotel reservations for the conference should be made through the hotel directly. Additional information as well as copies of the registration form and the conference agenda are available from:

Ford Clancy
CAL Coordinator
University of Toronto Computer Centre
Room 304
49 St. George Sreet
Toronto
M5S 1A1

Telephone (416) 928-6021

Ford Clancy

ANNOUNCING ICCH/2

The second International Conference on Computers and the Humanities (ICCH/2) will be held April 3 - 6, 1975, at the University of Southern California. It is co-sponsored by the Association for Literary and Linguistic Computing.

Papers and performances spanning the arts and humanities, are hereby invited. Papers may cover either the design of computer-related research or the results thereof. Performances may include computer-generated music, graphs, etc.

The deadline for submitting an abstract of your presentation is January 15, 1975. Please send it to:

Prof. Robert Dilligan or
Prof. Rudolf Hirschmann
ICCH/2, Founders Hall 407
University of Southern California
LOS ANGELES, California 90007
U.S.A.

Janet Campbell

ORDINARY DIFFERENTIAL EQUATION STUDY Or How I Learned to Solve Differential Equations and Love XSTART

Mr. Robert Bedet, of the Department of Computer Science, is currently evaluating various mathematical methods for the solving of ordinary differential equations using initial value conditions. He hopes to be able to

cont'd...

EQUATION STUDY Cont'd...

obtain data and information to aid in the choice of the optimal routine based on the specific initial values. Variations in efficiency of as much as 20% have been observed, depending on the choice of routine.

Mr. Bedet is willing to exchange information with programmers at the University of Toronto or any other installation. Anyone working in this area who is interested in saving money and/or time should contact Mr. Bedet at 928-8747 on any workday.

Herb Kugel

REVIEW OF THE UTCC OPEN HOUSE

UTCC recently completed its second Open House. The purpose of this event was to acquaint new users with the Computer Centre — its staff, hardware, software and facilities. Most of the scheduled events were well-attended and of the approximately 1200 participants, most were first year Engineering and Computer Science students. Open House sessions included an introduction to the High Speed Job Stream, introductions to TSO, APL and DATATALK and tours of the Computer Research Facility and of the REMCOM terminals. One of the new features of the Open House was a video tape presentation on the use of a High Speed Job Stream terminal (see following article).

It is hoped that the Open House presentations have made it easier for our new users to start their computing at UTCC. Inquiries are welcome from any instructors who will be scheduling their classes to use the computer later on in the year. The Centre is happy to make in-class presentations to introduce students to the Computer Centre. To arrange for a presentation, contact Don Gibson in the Information Office, SF128 or call 928-5568.

Don Gibson

UTCC'S AUDIO-VIDEO EXPERIMENT

This year's Open House at UTCC featured an audio-video tape presentation depicting a typical UTCC High Speed Terminal. The film was produced by Don Gibson of UTCC and the University of Toronto Media Centre with several UTCC staff making their acting debut as extras. The film explains and demonstrates the procedures required to operate the self-service equipment and what to do when error checks are produced on the machines. The film directs the viewer to the UTCC publication, HOW TO USE: AN IBM 029 KEYPUNCH, AN IBM 2501 CARD READER, AN IBM 1403 LINE PRINTER for a summary of the information contained on the tape.

In the past, the Computer Centre attempted to solve the problem of educating its new user community on the use of self-service equipment by means of orientation tours. Unfortunately, tours had several shortcomings: they required a large investment of

cont'd..

AUDIO-VIDEO EXPERIMENT Cont'd...

staff time, could only be given at designated times, and were often so well attended that many students could not hear or see due to overcrowding. The tape has eliminated these problems and with special camera techniques, certain points have been more clearly emphasized.

During the first two weeks of classes, the tape was shown continuously (with a few interruptions) between 9 a.m. and 5 p.m. in the Engineering Undergraduate Terminal and students were able to view the presentation in their free time. The tape was also shown in first year Engineering and Computer Science classes.

The tape presentation seems to have solved the problem of how to provide, quickly, conveniently and clearly, the information that will enable new HSJS users to use self-service equipment successfully.

Anyone wishing further information about the tape should contact Don Gibson in the Information Office, Sandford Fleming, room 128 or call 928-5568.

Janet Campbell

FALL EDUCATION SCHEDULE

Three times each calendar year, the University of Toronto Computer Centre presents a series of short courses for the University community. Most of the courses are designed to be "instruction — problem" sessions. The assignments given in a course form the basis for classroom discussion.

A schedule and descriptions of courses being offered follows. If you are interested in any of the courses:

1. Read and heed the prerequisites.
2. Fill out the registration COMPLETELY. The address you provide will be used for mailing you your confirmation -- use University addresses if possible. The location of the course will be indicated on the confirmation notice.
3. Act quickly to avoid being closed out of a course.

The pre-addressed registration form appears at the end of this issue of COMPUTERNEWS.

Introduction to Computers

Prerequisite: None
Dates: October 15, 16, 17
Time: 6 - 7:30 p.m.
Maximum # of Registrants: 30
Instructor: K. Fysh

This course is for people who have had little, if any, contact with computer programming. It is recommended as a prerequisite for any non-programmer intending to take an introductory course in any language during this schedule or at a later date. The course will explain the basics of:

> Bits, bytes, hexadecimal arithmetic, storage concepts, machine language, the role of processors/compilers, and program design techniques.

cont'd...

FALL EDUCATION Cont'd...

The student will have the opportunity to demonstrate and apply the concepts he learns by preparing and executing a simple program to meet specifications set by the instructor and through a short quiz.

Introductory Languages

The introductory languages offered are intended to act as starters. After completing the course, the student should have a good idea of whether or not he wants to learn the language. Each course will instruct the student in the basic statements and operations of the language. Assignments will be given out and the lecturer will base his presentations on these assignments. Computing facilities will be made available through the course. The student will be able to evaluate his progress by preparing and running a final assignment.

Introduction to ASSEMBLER

Prerequisite:	Introduction to Computers or experience in another programming language.
Dates:	November 4, 5, 6, 7, 8
Time:	3 - 4 p.m.
Maximum # of Registrants:	30
Instructor:	K. Fysh

The ASSEMBLER language is a symbolic programming language. It is closest to machine language in form and content and is a symbolic representation of the actual instructions used by a digital computer. While a single instruction in FORTRAN might generate several machine instructions, a single instruction in ASSEMBLER generates one machine instruction. Most system programs (O.S., HASP) are written in ASSEMBLER, as are many IBM compilers and utilities.

An ASSEMBLER program will always be more efficient than a FORTRAN program using the same algorithm, given equal programming skill, because it will be written more specifically for the application and will usually contain fewer instructions.

Introduction to PL/C

Prerequisite:	Introduction to Computers or experience in another programming language.
Dates:	October 21, 22, 24
Time:	6 - 7:30 p.m.
Maximum # of Registrants:	30
Instructor:	S. Pozgaj

PL/C is a subset of the PL/I language. PL/I is a versatile language which conveniently processes both numeric and alphabetic input.

Introduction to WATFIV

Prerequisite:	Introduction to Computers or experience in another programming language.
Dates:	October 21, 22, 25, 29, 31
Time:	3 - 4 p.m.
Maximum # of Registrants:	30
Instructor:	W. Colditz

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FALL EDUCATION Cont'd...

WATFIV is a subset of the FORTRAN language. FORTRAN is a language oriented towards efficient number processing or "scientific" computing.

Introduction to Job Control Language (JCL)

Prerequisite: Knowledge of, and experience in using, a programming language.

St. George Campus
Dates: November 11, 13, 15, 18, 20
Time: 3 - 4 p.m.
Maximum # of Registrants: 30
Instructor: W. Gillart

OR

Dates: November 11, 12, 14
Time: 6 - 7:30 p.m.
Maximum # of Registrants: 30
Instructor: T. Shafran

Erindale College
Dates: November 11, 13, 15, 19, 21
Time: 3 - 4 p.m.
Maximum # of Registrants: 30
Instructor: V. Lawrason

Job Control Language is the programmer's means of giving instructions and information to the Operating System. Through JCL, requests are made (e.g. memory allocation), information is given to the system (e.g. accounting and class information) and datasets are manipulated. This course is intended to present the basic statements of JCL and explain their uses. The student will be expected to test his knowledge by using JCL to access and manipulate datasets placed on the system by the instructor.

NOTE: We are trying to set up a JCL course at Scarborough for early December. Please watch next month's COMPUTERNEWS.

Introduction to Paper Tape

Prerequisite: none
Date: October 23
Time: 2 - 3 p.m.
Maximum # of Registrants: 15
Instructor: R. Radcliffe

A short introduction to the facilities available for converting data from paper tape to other media on the S/370/165-II.

Introduction to Datasets

Prerequisite: Knowledge of, and experience in using, a programming language. Elementary knowledge of JCL.
Dates: October 28, 29, November 1, 5, 7
Time: 4 - 5 p.m.
Maximum # of Registrants: 30
Instructor: W. Colditz

This course will provide an introduction to the following items:

- Dataset organization and access methods
- Dataset registration at UTCC
- Dataset labels and the use of labels

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FALL EDUCATION Cont'd...

The student will be expected to practice using the information presented by creating, reading and manipulating datasets. A significant part of each lecture will be dedicated to a discussion of the assigned problems. Access to the GPJS will be provided through the course.

Courses in Plotting

General Plotting Seminar

Prerequisite: Experience in using Gould or Calcomp
Date: October 25
Time: 2 - 3 p.m.
Maximum # of Registrants: OPEN
Instructor: R. Radcliffe

The seminar will be a discussion of the special features of the Gould plotter which are not available on the Calcomp plotter. Also, there will be a discusssion of the techniques for the conversion from, or the compatability of, CALCOMP plotting to Gould plotting.

Basic Plotting (Graphics, Gould, Calcomp)

Prerequisite: Currently programming in FORTRAN.
Dates: November 18, 19, 20, 21
Time: 4 - 5 p.m.
Maximum # of Registrants: 30
Instructor: R. Radcliffe

The student will receive the basics of using the Calcomp and Gould plotters. The plotters produce graphics, drawings, tables, etc., from programs executed on the UTCC S/370/165-II. Access to these machines will be provided through the course. By the end of the course, the student should be able to produce simple plotted output.

Plotting for Non-Programmers

Prerequisite: None
Date: December 2, 3
Time: 3 - 4 p.m.
Maximum # of Registrants: 30
Instructor: R. Radcliffe

The course will be a discussion of methods that may be used to convert raw data into graphs using pre-packaged programs. Although it is aimed at the non-programmer, experienced programmers with graphing requirements should also benefit from the course.

Interactive Computing

Data Management and Programming Techniques in APL*PLUS

Prerequisite: Programming with APL*PLUS (faculty, staff or graduate student)
Dates: November 4, 6, 8
Time: 4 - 6 p.m.
Maximum # of Registrants: 20
Instructor: F. Clancy

This intermediate level course is designed to aid users already familiar with APL in writing applications utilizing the enhancements embodied in APL*PLUS.

The course will consist of two problem cases and their solutions and will include a general discussion of the aspects of data accumulation, security and addressing techniques using the file subsystem. APL accounts will be available for the duration of the course. Registrants will be encouraged to write APL functions and to discuss their results.

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FALL EDUCATION Cont'd...

Enrollment is limited. This course is intended for faculty, staff and graduate students.

An Introduction to APL

Prerequisite:	(faculty, staff, or graduate students)
Dates:	November 11, 12, 13, 14
Time:	4 - 5:30 p.m.
Maximum # of Registrants:	25
Instructor:	F. Clancy

An introduction for the novice user to interactive computing using APL (A Programming Language), a concise and powerful computational tool.

Topics such as the workspace concept, primitive functions, primitive operators, system commands and function definition will be discussed. APL accounts will be available for the duration of the course. Registrants will be encouraged to write APL functions and to discuss their results.

Enrollment is limited. This course is intended for faculty, staff and graduate students.

Introduction to Time Sharing Option (TSO)

Prerequisite:	Knowledge of a computer language. An elementary knowledge of JCL would be advantageous.
Date:	November 22
Time:	1 - 4:30 p.m. Tutorial sessions to be arranged
Maximum # of Registrants:	100
Instructor:	I. Darwin

The course will be a survey of the facilities available on TSO at UTCC. The topics to be covered include text editing, dataset management, remote job entry, interactive program execution, interactive program debug and interactive applications. Users who are not currently using TSO but would like to learn to program more effectively with TSO will be interested in this course. The course will also contain some information of interest to current TSO users who would like to learn more about the system.

TSO accounts will be available for a two week period for those who attend the 3 1/2 hour session. Terminals will be provided during the tutorial sessions.

SPEAKEASY

Prerequisite:	None
Date:	November 25
Time:	2 - 4 p.m. Tutorials to be arranged
Maximum # of Registrants:	30
Instructor:	R. Schulte

SPEAKEASY is a computer language for interactive processing of data in the physical and social sciences. The language is designed so that the user can obtain immediate results to both simple and complex problems. The structure of SPEAKEASY is such that the user can quickly and easily master the language. The course includes an introduction to the language and a description of its elements and special features. No previous programming experience is needed. Access to the system will be provided through the course.

Don Gibson

The following article is reprinted from the University of Toronto Bulletin, Fall Term Supplement dated September 13, 1974.

STUDENTS DO VERY WELL TAUGHT BY COMPUTER

Computers are apparently excellent teachers.

Dr. F.G. Smith of the Department of Geology, who has been working with computer teaching methods, compared last year's performance of eight computer-taught students with 34 of those taught by traditional methods. The students were all enrolled in a introductory geology course, GLG 100.

The eight computer-taught students did not attend any lectures on the physical and historical texts they were assigned. Yet they finished the course with an average computer assigned mark of 94.1 per cent.

Thirty-four other students, who attended the traditional lectures and tutorials, earned an average final mark of 67.4 per cent, based on the same material. The students responded to more than 1,200 test questions over the year.

Although the computer-interactive students were selected on the basis of I.Q. to minimize any damage in the event that the method proved to be a failure, their lab marks were not substantially higher than those who attended the traditional class.

The computer-interactive students earned an average mark of 76.0 per cent for lab assignments and tests. The other group had an average mark of 74.1 per cent. The lab part of the course, points out Dr. Smith, was taught by traditional methods.

This fall a larger fraction of the class will be selected randomly for a statistical test of whether the computer teaching method is better than the traditional one.

Dr. Smith cited some factors to explain the performance of computer-taught students. They had access to the computer from 8:30 a.m. to 4 a.m. seven days of the week. They could, therefore, define their own "class" hours. The students could also spend as many hours with the computer as they wished. Under the traditional teaching method there are only about 50 contact hours with the instructors at specified times.

CBC FILM OF UTCC TO BE TELEVISED

A few months ago, the CBC was involved in filming some of the facilities available at the University of Toronto Computer Centre for their show 'The Nature of Things'. The end-product of the filming, a program entitled 'Mind and Hand', will be televised November 6 at 8 p.m. on Channel 5, cable 6.

Don Gibson

RECENT ACQUISITIONS IN THE DEPARTMENT OF COMPUTER SCIENCE LIBRARY

Derksen, H.G.
    Introduction to Project Planning by Network Analysis
Amsterdam, IFIP APD Group, 1967

International Workshop on Protection in Operating Systems, Rocquencourt, France, Aug. 1974
    Protection in Operating Systems
Rocquencourt, I.R.I.A., 1974

Madnick, S.E. and Donovan, J.J.
    Operating Systems
New York, McGraw-Hill, 1974

Parker, James L. and Bohl, M.
    FORTRAN Programming and WATFIV
Chicago, Science Research Association, 1973

Perlman, Stephen B.
    Legal Aspects of Selected Issues in Telecommunications
Montvale, N.J., AFIPS Press, 1970

Trakhtenbrot, Boris A. and Barzdin', Ya. M.
    Finite Automata: Behavior and Synthesis
Amsterdam, North-Holland, 1973

PERSONNEL CHANGES

Farewells this month go to Faye Dennis and Anita Chowzun of System/370 Services and to Nancy Pocock of Administration. Good luck in your new endeavours.

Joining the Computer Centre is Beverley Martin. Beverley is Stan Yagi's new secretary for System/370 Services. Welcome and hope you will enjoy working with us.

Trudy Holland

THANKSGIVING HOLIDAY

The following hours of service will be in effect for System/370 Services users during the Thanksgiving holiday weekend:

	Oct. 12 (Saturday)	Oct. 13 (Sunday)	Oct. 14 (Monday)
SF TERMINAL (SF112)	9am - 5pm	9am - 5pm	closed
EUT	9am - 5pm	9am - 5pm	closed
ASUT	10am - 5pm	10am - 5pm	closed
AST	10am - 5pm	10am - 5pm	closed

Normal hours of service will resume on Tuesday, October 15.

Janet Campbell

ERINDALE HOURS OF SERVICE

The following hours of service are now in effect for Erindale Computer Services users:

Monday - Thursday	9 a.m. - 10 p.m.
Friday	9 a.m. - 5 p.m.
Saturday	12 noon - 5 p.m.
Sunday	closed

In addition to regular advising services, APL advising will be provided by members of the Computer Science Club. APL advising hours will be posted on the door of room 2005.

Muriel Elles

VS2 RELEASE 2 PERFORMANCE RESULTS

Recent COMPUTERNEWS articles have covered the ongoing evaluation of VS2 Release 2 as well as the decision to install the DAT feature on the IBM 370/165.

In order to verify the expected results of the upgrade, a bench-mark of 71 Batch and 270 High Speed Job Stream jobs, with the same CPU and I/O usage distribution as our production load, was constructed. The bench-mark was run on the tuned OS MVT System before and after the DAT feature upgrade as well as on the new VS2 Release 2 System after the upgrade.

	Elapsed Time (sec)	Total CPU Usage (sec)	Total Channel Usage (sec)
165 OS MVT	1286	1033	734
165-II OS MVT	1215	986	754
165-II VS2 Rel 2	1148	1055	420

Figure 1 - Bench mark run measurements

A CPU speedup of 4.5% was experienced due to the DAT upgrade itself. The combined effect of the DAT upgrade and VS2 Release 2 are as follows:

1. Additional CPU usage: 2%
2. Improvement in channel availability: 40%
3. Improvement in system throughput: 10%

Gerard Milandre

SUBMISSION OF JOBS FOR VS TESTING

Want to see your job run under VS? S/370 Services is running a free service for this purpose. Simply submit your job to Herb Kugel (928-7286) or Bill Gillart (928-6355) in room SF125. Turnaround should take approximately two days.

Bill Gillart

DATASET NAMING CONVENTION ESTABLISHED

A naming convention has been established for datasets which are a part of the S/370 production system. Adoption of this naming convention will allow Computer Centre users and staff to clearly identify system datasets and will aid in system dataset maintenance and control.

The naming convention consists of a first level qualifier which identifies the group to which the dataset belongs. The following mneumonic group names may be of interest to users as some of the datasets belonging to these groups can be referenced directly by JCL procedures.

UTIL.
  Program libraries and datasets associated with non-IBM utilities

TSO.
  TSO program libraries and datasets

APPL.
  Application program libraries and datasets

GOULD.
  Gould program libraries and datasets

CALCOMP.
  Calcomp program libraries and datasets

PLOTTER.
  Plot program libraries common to Calcomp and Gould

SYS1.
  IBM program libraries and datasets

Changes scheduled to be made to names of datasets referenced directly by user JCL, will be posted in HOTNEWS and COMPUTERNEWS.

Users not using UTCC-supplied catalogued procedures will be affected by the following changes:

Gould plotter users:
TS00011.G5000.LOAD
  becomes GOULD.USER.LMODS

Calcomp users:
IC.CALCOMP.LMODS
  becomes CALCOMP.USER.LMODS

Calcomp and Gould users:
IC.CALCOMP.EXT.LMODS
  becomes PLOTTER.EXT.LMODS
IC.PLOTTER.LMODS
  becomes PLOTTER.EXT.LMODS

Paper tape users:
IC.UTIL(PTMOUNT)
  becomes APPL.PTAPE.LMODS(PTMOUNT)
IC.USG.LMODS(PAPER)
  becomes APPL.PTAPE.LMODS(PAPER)
IC.USG.LMODS(PAPER1P2)
  becomes APPL.PTAPE.LMODS(PAPER)

Rein Mikkor

TAPE DRIVE UPGRADE

Early in September, two of the four 9-track 3400 Series tape drives attached to the 370/165-II were upgraded from model 5's to model 6's. This enables them to read and write magnetic tapes at the new 6250-bits-per-inch (BPI) density. Two of the drives continue to offer the 800 BPI and 1600 BPI densities, while the upgraded drives can operate at either 1600 BPI or 6250 BPI.

The original reason for the upgrade was the potential reduction in time and in the number of tape volumes required for the disk dumps that are performed daily for backup purposes. However, the new drives are available to all users. This article will outline their technical advantages.

When the 6250 BPI density is used, instead of the older 800 or 1600 BPI density, an inter-block gap of 0.3 inches is used instead of one of 0.6 inches. The higher recording density and smaller inter-record gap together mean that a 6250 BPI volume can contain up to three times the quantity of data that can be stored at 1600 BPI, depending on blocking factor. The data transfer rate increases correspondingly from 200,000 bytes per second to 780,000 bytes per second.

A new group-coded recording technique is used at the new high density. This technique allows the correction "on the fly" (while the tape continues uninterrupted motion) of both single and double-bit read errors. Error checking and correction bits are recorded within tape records embedded in the data. The new ability to correct double-bit errors eliminates the backspace-and-reread procedure previously necessary and reduces the number of permanent read errors.

Another new feature of the drives, when reading at 6250 BPI, is that the read amplifier's gain is automatically adjusted when reading begins, according to the signal level present on the tape. This facility allows successful reading of 6250 BPI tapes with a wide range of signal levels.

Some features of the new drives actually improve their characteristics at 1600 BPI as well as at 6250 BPI. A new "cleaning web" cleans the tape and protects the read-write head during the loading operation (previously the main source of head contamination). Also, the time required for the tape to accelerate to full speed from stopped status is decreased even at 1600 BPI.

On reading, the density will continue to be set correctly automatically, regardless of specified density, provided the drive is capable of reading at the tape's actual density. Because it is no longer true that all 9-track drives can read and write at all available densities and because the default density varies according to the highest available density on the allocated drive, it is essential to specify both correct UNIT and correct DCB=(DEN=) information on DD cards. In addition, the correct unit name must be specified on /*SETUP control cards.

cont'd...

TAPE DRIVE UPGRADE Cont'd...

In the past, such information could sometimes be omitted or inaccurate with no adverse consequences. Now, incomplete specification may cause tape I/O errors and other problems.

Tests indicate that most tape volumes that operate satisfactorily at 1600 BPI will operate as well, or better, at 6250 BPI. IBM recommends that 2400 foot volumes which produce more than 35 write-checks (the count is shown in the text of message IEC209I when the tape is used) should be replaced as they degrade performance at either 1600 or 6250 BPI. S/370 internal use of 6250 BPI on new tapes in the tape library has indicated few errors at the high density. The S/370 Services tape librarian will assist in testing tapes on request.

When considering use of the new density, users should bear in mind that portability of the resulting tapes to other installations may be limited until those installations install 6250 BPI capability. Even on the 370/165-II, there are still more drives capable of recording at 1600 BPI than at 6250 BPI. For these reasons, many users may wish to continue to use lower densities, while others may choose to take advantage of the new high density.

The Terminal Co-ordinators and advisors are available to assist users with questions or problems concerning the new tape drives.

Don Brady

FORTRAN I/O ROUTINE OBTAINED

Mr. Charles Cohen of the Institute for Policy Analysis has kindly donated to UTCC his RDBLCK subroutine which he has written as an aid for advanced FORTRAN applications. This subroutine is useful in several ways.

It is normally impossible for a FORTRAN program to read concatenations of datasets on unlike devices since the run-time package does not support them. In addition, because the run-time package does not permit binary reads of RECFM=U files and does not return the block length in a formatted read, it is often very difficult to read abnormally formatted tapes written on non-IBM computers.

The RDBLCK subroutine, written in Assembler and compatible with FORTRAN programs, lets the user get one level closer to the physical storage medium. It allows a FORTRAN program to read a file (for example, a concantenation of datasets on unlike devices) into a user-supplied buffer area, one physical block at a time.

Usage:

```
    CALL RDBLCK (ARRAY,LENGTH)
```

At each call, RDBLCK will read one block of the file with ddname INPUT (using ARRAY as an input buffer) and put the length of the block read (in bytes) into LENGTH (a 4-byte integer). ARRAY must be dimensioned so that it is able to hold the largest block in the file, otherwise anything may happen. When it reaches end-of-file, RDBLCK returns LENGTH=0.

cont'd...

FORTRAN I/O ROUTINE Cont'd...

The FORTRAN program is responsible for interpreting the contents of ARRAY. This may prove to be a difficult task. However, the aim of RDBLCK is not to make things easy, but to make them possible.

The routine is in IC.UTILLIB and uses a DD statement named INPUT to access the data. No DCB parameters should be supplied. Sample JCL for a 9-track 1600 BPI unlabelled nonstandard tape would be:

```
//   EXEC FORTGO,LIBRARY=UTILLIB
//FORT.SYSIN DD *
                    .
                    .
                    .
        CALL RDBLCK (A,LENGTH)
                    .
                    .
                    .
/*
// GO.INPUT DD UNIT=3400-3,LABEL=(1,BLP),
//          VOL=SER=nnnn,DSN=dummy,
//          DISP=OLD
```

Anyone with questions about RDBLCK should contact Herb Kugel at 928-7286.

Herb Kugel

3704 COMMUNICATIONS CONTROLLER ACQUIRED

An IBM 3704 model A1 Communications Controller has recently been added to the S/370 Services hardware configuration.

The 3704, a programmable or "intelligent" device, takes its place beside the older, "hard-wired" 2703 telecommunications control unit. These two machines form the base to which telephone and leased lines are attached. It is by means of these lines that remote batch terminals (Erindale, Arts and Science, etc.) as well as TSO terminals (teletypes, cathode-ray-tube terminals and IBM 2741's) talk to the 370/165-II.

The new controller was obtained because it offered the most economical means of providing 30 character/second dial-in service for time-sharing users with teletype-compatible terminals. This service, not feasible on the older 2703, is now beginning operation . Also, although the 3704's capacity is smaller than that of the 2703, it does give additional flexibility to the teleprocessing system.

A 2703 emulator is currently running in the 16K bytes of controller storage. That is, the programmable nature of the 3704 has been exploited only to the extent of supplying the kind of function provided by earlier non-intelligent "front-ends". However, IBM is releasing for the 3704, and for another larger model known as the 3705, what it calls the Network Control Program. The 3705 Communications Controller is currently supported on the S/360-65 at UTCC. This program allows the 3704 or 3705 to take over a major part of the line control workload and network management function now performed by the host CPU (i.e. the S/370). New terminals have also

cont'd...

COMMUNICATIONS CONTROLLER Cont'd...

been announced which will communicate with the 3704 or 3705. The terminals will run under the Network Control Program (NCP) using a new line control protocol called synchronous data link control (SDLC). NCP will probably be implemented at some point in the future at UTCC, depending on requirements.

Don Brady

GOULD SELF-SERVICE/FANFOLD PAPER

The Gould printer/plotter has been moved next to the self-service printers in SF112 and is now operating on a self-service basis. This move, in conjunction with the introduction of the improved software system, (use of SYSOUT classes), should assure extremely good service for Gould users. At present, the Gould plots are often ready before the printed output appears on the self-service printer. However, the load is expected to increase during the coming months and turnaround will be much more dependent on priority.

Another change under study is the introduction of fanfold paper. Although fanfold paper has been used experimentally, it has been found that the quality of printing is sub-standard. When this problem is solved, fanfold paper will become the standard, although roll paper will still be supported.

There are two major advantages to using fanfold paper. From an operational point of view, fanfold paper is better since it stacks neatly on the back of the plotter rather than ending in a pile on the floor. It is also easier to handle as a finished plot. The use of this paper will also allow the production of plots longer than 15 feet, providing the correct software is used.

A General Plotting Seminar is being offered as part of the UTCC Fall Education Schedule. Interested users should refer to the article appearing elsewhere in this issue of COMPUTERNEWS.

Bob Radcliffe

TSO TOPICS

As announced in last month's COMPUTERNEWS, the TSO EDIT subcommands obtained from Palm Beach Computer Consultants are now available. These commands are COPY, MOVE, DUP and LNO.

COPY is used to copy a line or range of lines from one place in the dataset to another. MOVE performs a similar function except that the original lines are erased in the process. The syntax for these commands is:

```
COPY  line1 (line2) to-line# (incr) (R)

MOVE  line1 (line2) to-line# (incr) (R)
```

cont'd...

TSO TOPICS Cont'd...

In each case, line 1 is the first line to be moved/copied. If line 2 is specified, then all lines from line 1 to line 2 inclusive are moved/copied. The 'to-line #' is the line number at which the data is to be placed. This is different from the use of MERGE. MERGE requires that you specify the line number after which the data is to be placed; MOVE or COPY allow you to specify the line number at which the data is to be placed. For example:

```
COPY    110   120   201
or
MERGE * 110   120   200
```

to copy lines 110 through 120 after line 200. Note also that MERGE renumbers the dataset while MOVE or COPY only renumber the new lines. Both 'incr' and 'R' are optional. The default for 'incr' is 1, that is, the new lines are usually renumbered by adding '1' to each consecutive line number. If R is specified, replacement will occur if all the lines will not fit into the specified to-line range. If R is not specified, the operation terminates when a line is encountered in the to-line range. This will leave the lines partly moved or copied, hence one should use care when calculating moves before trying them. This again is different than MERGE. MERGE automatically renumbers the dataset, on the assumption that the user is incompetent to calculate an insertion. It copies the merged file onto a temporary dataset, then copies this back into the EDIT work area. MOVE or COPY assume that the user knows what he wants moved, and therefore move the data directly within the EDIT area, and hence, operate more rapidly.

DUP performs a function similar to COPY. Its function is to DUPlicate a (single) line many times within the dataset. The syntax is:

```
DUP from# to# (count) (incr)  (R)
```

The 'from #' is the line number of the line to be duplicated. The 'to #' is the location where you want the duplicate line(s) inserted. 'Count' is the number of copies of the 'from #' line that you want. The other parameters 'incr' and 'R' are as specified above. For example, to make 7 copies of line 3210 immediately after the original, type

```
DUP  3210  3211  7
```

To duplicate this line at the bottom of the dataset, renumbered by 10 rather than 1,

```
DUP  3210  4150  7  10
```

where 4150 is the number of a new line 10 beyond the current end (e.g. 4140 is the last line before the DUP operation).

To make COPY, DUP and MOVE more useful, it is convenient to have some means of finding the line number of a given line. Therefore the LNO command is available. This command has no operands and returns two values; the line number of the current line and the number of lines in the EDIT work area. For example, to find the line number of the last line,

cont'd...

TSO TOPICS Cont'd...

```
BOTTOM
LNO
or (using abbreviations)
B
#
```

The response could be

```
AT  4140  OF  407
```

This would indicate that the current line number is 4140, and that there are 407 lines in the active dataset. (This could arise for example if the dataset had 414 lines, numbered by 10, and 7 had been deleted.) If the dataset is not line numbered, i.e. NONUM, then the line number of a given line will be its internal line number (internal to the EDIT work area routines). This number's value need not concern the user, as it is the same number he will use on the COPY/DUP/MOVE command. This number is not the same as the 'relative line number' used on MERGE.

These commands should result in a significant improvement to TSO's text editing facility. Any comments on them will be appreciated, as will comments on any aspect of the EDIT facility or TSO usage. Please contact Ian Darwin at 928-7318, in room SF116 or use the ISUGGEST command.

Ian Darwin

HSJS ADVISING HOURS

The following High Speed Job Stream advising hours will be in effect during the 1974 - 1975 academic year:

AST/ASUT (Sidney Smith Building, room 1071)

Monday - Thursday	11.00 - 20.00
Friday	11.00 - 17.00
Saturday, Sunday	12.00 - 17.00

SFT/EUT (Sandford Fleming Building, room 117)

Monday - Thursday	10.00 - 20.00
Friday	10.00 - 17.00
Saturday, Sunday	12.00 - 17.00

Advisors are now available in the above rooms and the service will continue until the middle of April, 1975. Any comments or suggestions should be directed to Marlene Domoney, Co-ordinator AST/ASUT (928-6509), or Mark Tapia, Co-ordinator SFT/EUT (928-7109).

Mark Tapia

CORRECTION

Last month's COMPUTERNEWS article on New Processors (HSJS NEWS) should have credited the University of Chicago and National Opinion Research Council with the development of SPSSQ, instead of Stanford University.

Mark Tapia

HSJS MONTHLY STATISTICS

During the month of August, 1974, 32,125 jobs were processed compared with 50,040 for the previous year, a decrease of 35.8% This decrease in job throughput can be explained by the week long shutdown of the S/370-165 for the installation of the DAT feature which took place during August.

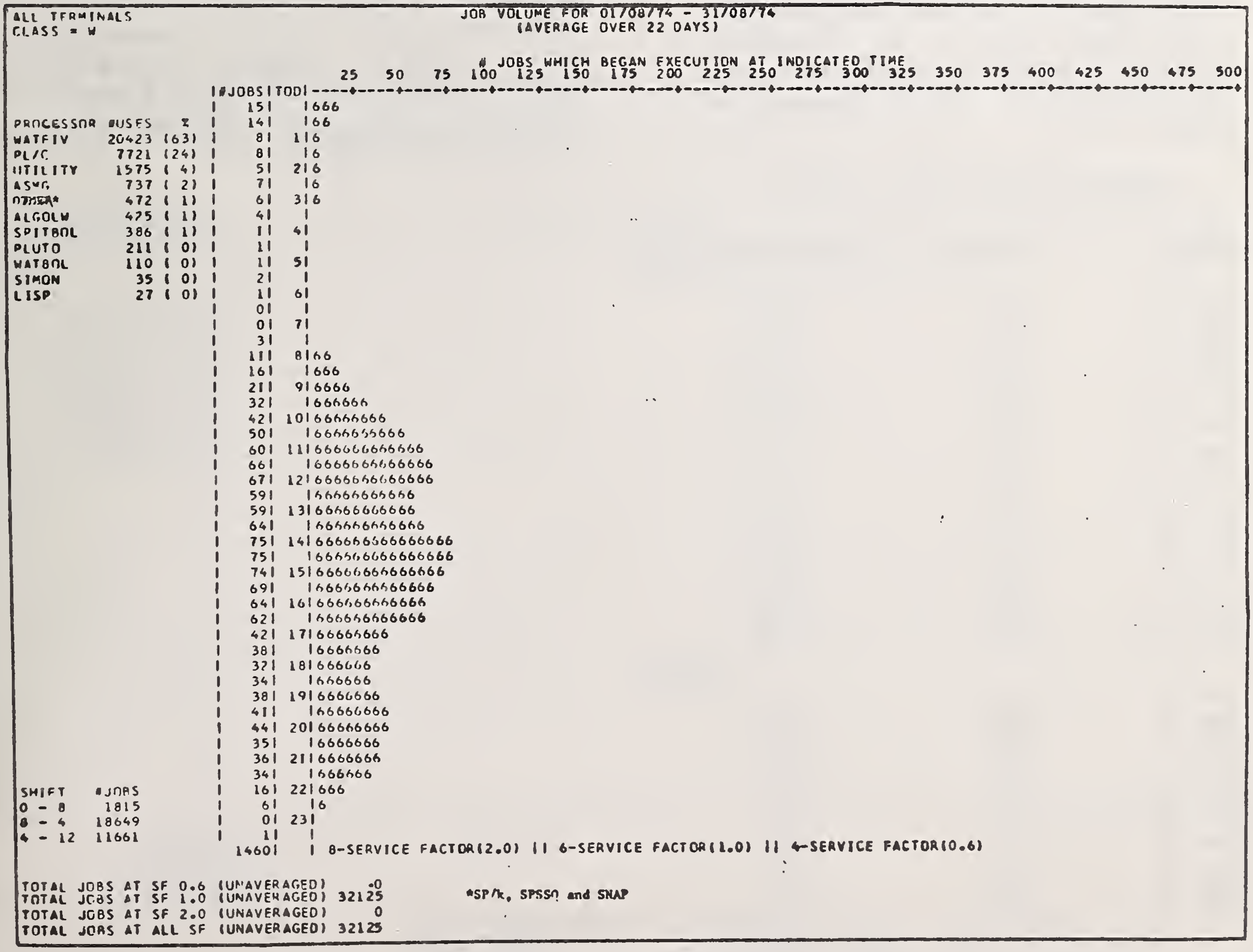
The following charts summarize the HSJS activity for the month of August. The graph represents the average number of jobs processed during each half hour period of the day.

Mark Tapia

RESOURCE_USAGE_BY_PROCESSOR

PROCESSOR	#USES	%TOTAL	TOTAL PER PROCESSOR CPU (MIN)	#CARDS READ	#LINES PRINTED	AVERAGE PER USE CPU (MIN)	#CARDS READ	#LINES PRINTED
WATFIV	20423	(64)	419.55	5136060	4423357	0.020	248	216
PL/C	7721	(24)	139.58	1240965	1787413	0.016	160	228
UTILITY	1575	(5)	7.13	444880	498092	0.004	280	316
ASMG	737	(2)	10.57	131040	166374	0.012	176	224
OTHER*	472	(1)	3.21	45539	64462	0.004	96	136
ALGOLW	425	(1)	7.87	62912	87769	0.016	148	204
SPITBOL	386	(1)	8.16	267186	161279	0.020	692	416
PLUTO	211	(1)	3.32	19289	25673	0.016	88	120
WATBOL	110	(0)	2.22	43934	36108	0.020	396	328
SIMON	35	(0)	0.10	1717	2636	0.000	48	72
LISP	27	(0)	0.29	4469	6981	0.008	164	256
ASSIST	3	(0)	0.01	249	348	0.004	80	116
TOTAL	32125		602.01	7398240	7260492	0.019	230	226

*SP/k, SPSSQ and SNAP



```
ALL TERMINALS                                            JOB VOLUME FOR 01/08/74 - 31/08/74
CLASS = W                                                   (AVERAGE OVER 22 DAYS)

                                                       # JOBS WHICH BEGAN EXECUTION AT INDICATED TIME
                                        25   50   75  100  125  150  175  200  225  250  275  300  325  350  375  400  425  450  475  500
                           |#JOBS|TOD|----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+
                           |   15|   |666
PROCESSOR  #USES    %      |   14|   |66
WATFIV     20423 (63)      |    8|  1|6
PL/C        7721 (24)      |    8|   |6
UTILITY     1575 ( 4)      |    5|  2|6
ASMG         737 ( 2)      |    7|   |6
OTHER*       472 ( 1)      |    6|  3|6
ALGOLW       425 ( 1)      |    4|   |
SPITBOL      386 ( 1)      |    1|  4|
PLUTO        211 ( 0)      |    1|   |
WATBOL       110 ( 0)      |    1|  5|
SIMON         35 ( 0)      |    2|   |
LISP          27 ( 0)      |    1|  6|
                           |    0|   |
                           |    0|  7|
                           |    3|   |
                           |   11|  8|66
                           |   16|   |666
                           |   21|  9|6666
                           |   32|   |666666
                           |   42| 10|66666666
                           |   50|   |6666666666
                           |   60| 11|666666666666
                           |   66|   |6666666666666
                           |   67| 12|6666666666666
                           |   59|   |66666666666
                           |   59| 13|66666666666
                           |   64|   |666666666666
                           |   75| 14|666666666666666
                           |   75|   |666666666666666
                           |   74| 15|66666666666666
                           |   69|   |6666666666666
                           |   64| 16|666666666666
                           |   62|   |666666666666
                           |   42| 17|66666666
                           |   38|   |6666666
                           |   37| 18|666666
                           |   34|   |666666
                           |   38| 19|6666666
                           |   41|   |66666666
                           |   44| 20|66666666
                           |   35|   |6666666
                           |   36| 21|6666666
SHIFT    #JOBS             |   34|   |666666
0 - 8     1815             |   16| 22|666
8 - 4    18649             |    6|   |6
4 - 12   11661             |    0| 23|
                           |    1|   |
                             1460|   | 8-SERVICE FACTOR(2.0) || 6-SERVICE FACTOR(1.0) || 4-SERVICE FACTOR(0.6)

TOTAL JOBS AT SF 0.6 (UNAVERAGED)    -0          *SP/k, SPSSQ and SNAP
TOTAL JOBS AT SF 1.0 (UNAVERAGED) 32125
TOTAL JOBS AT SF 2.0 (UNAVERAGED)     0
TOTAL JOBS AT ALL SF (UNAVERAGED) 32125
```

S/370 RELIABILITY

The reliability statistics for August show a marked improvement over last month's report. This improvement can be mainly attributed to the decrease in hardware downtime minutes, even though the percentage of hardware downtime remained constant over last month's figures. For August, the uptime percentage was 98.3 while the average number of IPL's per day was 0.86. The scheduled hours of production for August totalled 380.

It should be noted that during August the Centre was shut down to install the DAT feature on the 370/165. The installation went quite smoothly and was completed in only nine days. No hardware problems have been recorded in association with the DAT feature to date.

MONTHLY COMPARATIVE FIGURES

MONTH	%UPTIME	UNSCHED.IPL's/DAY
JAN 73	96.8	0.87
FEB 73	98.3	1.18
MAR 73	97.8	1.16
APR 73	97.1	1.39
MAY 73	98.5	1.20
JUN 73	98.5	1.70
JUL 73	99.4	0.37
AUG 73	97.6	1.13
SEP 73	86.8	3.63
OCT 73	95.6	1.83
NOV 73	98.1	0.93
DEC 73	98.6	0.62
JAN 74	97.0	1.37
FEB 74	98.3	1.25
MAR 74	98.7	1.06
APR 74	99.3	0.52
MAY 74	99.2	0.87
JUN 74	96.1	0.75
JUL 74	91.7	1.66
AUG 74	98.3	0.86

The percentage breakdown of total system downtime for August was: HARDWARE - 323 minutes (85.6%); SOFTWARE - 35 minutes (9.2%); OTHERS - 20 minutes (5.2%). The major events contributing to these downtime totals were as follows:

August 22, 24: A total of 130 minutes of downtime and 2 IPL's were attributed to a faulty 7330 ITEL disk drive which caused System 005 wait state failures. A faulty card in the control unit interface was replaced by ITEL.

August 25: A total of 123 minutes of downtime and 1 IPL were attributed to control unit checks on Channel 4 which were caused by a malfunction in the 7330 control unit. Limited production (no TSO service) was necessary until a part could be flown from Montreal to rectify the failure.

Dave Rauch

```
                 DOWNTIME REPORT ON   S/370  FOR AUG 74

------------------------------------------------------------------------------------------------------------------------------
|                                              REIPLS(FREQ) // DOWNTIME (MN)                                                 |
|  DAY  REIPL   DNTIME 0    5    10   15   20   25   30   35   40   45   50   55   60   65   70   75   80   85   90   95   100|
=======================+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+----+|
| T  1      0       0  |                                                                                                     |
| F  2      2      13  |□□***********                                                                                        |
| S  3 (CENTER CLOSED) |                                                                                                     |
| S  4 (CENTER CLOSED) |                                                                                                     |
| M  5 (CENTER CLOSED) |                                                                                                     |
| T  6 (CENTER CLOSED) |                                                                                                     |
| W  7 (CENTER CLOSED) |                                                                                                     |
| T  8 (CENTER CLOSED) |                                                                                                     |
| F  9 (CENTER CLOSED) |                                                                                                     |
| S 10 (CENTER CLOSED) |                                                                                                     |
| S 11 (CENTER CLOSED) |                                                                                                     |
| M 12      1       8  |□*******                                                                                             |
| T 13      1       5  |□****                                                                                                |
| W 14      0       0  |                                                                                                     |
| T 15      2      15  |□□*************                                                                                      |
| F 16      0       0  |                                                                                                     |
| S 17      0       0  |                                                                                                     |
| S 18      0       0  |                                                                                                     |
| M 19      0       0  |                                                                                                     |
| T 20      2      20  |□□******************                                                                                 |
| W 21      0       0  |                                                                                                     |
| T 22      4      27  |□□□□***********************                                                                          |
| F 23      2      14  |□□************                                                                                       |
| S 24      1     125  |□*********************************************************************************************** 125 |
| S 25      1     123  |□*********************************************************************************************** 123 |
| M 26      0       0  |                                                                                                     |
| T 27      0       0  |                                                                                                     |
| W 28      1       5  |□****                                                                                                |
| T 29      0       0  |                                                                                                     |
| F 30      1      10  |□*********                                                                                           |
| S 31      1      13  |□************                                                                                        |
------------------------------------------------------------------------------------------------------------------------------


  LEGEND      : ONE □   =ONE REIPL
                ONE *   =ONE MINUTE OF DOWNTIME
```

```
                         S/370  DOWNTIMES DURING AUG 74

------------------------------------------------------------------------------------------------------------------------------
|                                                  TIME OF DAY (HOURS)                                                       |
|  DAY    RELOADS DNTIME  0   1   2   3   4   5   6   7   8   9   10  11  12  13  14  15  16  17  18  19  20  21  22  23  24|
=========================+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+--|
| T  1      0       0    |                                                                                                   |
| F  2      2      13    |             H  S                                                                                  |
| S  3   (CENTER CLOSED) |                                                                                                   |
| S  4   (CENTER CLOSED) |                                                                                                   |
| M  5   (CENTER CLOSED) |                                                                                                   |
| T  6   (CENTER CLOSED) |                                                                                                   |
| W  7   (CENTER CLOSED) |                                                                                                   |
| T  8   (CENTER CLOSED) |                                                                                                   |
| F  9   (CENTER CLOSED) |                                                                                                   |
| S 10   (CENTER CLOSED) |                                                                                                   |
| S 11   (CENTER CLOSED) |                                                                                                   |
| M 12      1       8    |                                                                                      H            |
| T 13      1       5    |                                 H                                                                 |
| W 14      0       0    |                                                                                                   |
| T 15      2      15    |                                            H                       S                              |
| F 16      0       0    |                                                                                                   |
| S 17      0       0    |                                                                                                   |
| S 18      0       0    |                                                                                                   |
| M 19      0       0    |                                                                                                   |
| T 20      2      20    |H                                                              S                                   |
| W 21      0       0    |                                                                                                   |
| T 22      4      27    |H                                              H                       H    O                       |
| F 23      2      14    |                                                           H O                                     |
| S 24      1     125    |                                    HHHHHHHHH                                                      |
| S 25      1     123    |                                    HHHHHHHHH                                                      |
| M 26      0       0    |                                                                                                   |
| T 27      0       0    |                                                                                                   |
| W 28      1       5    |          S                                                                                        |
| T 29      0       0    |                                                                                                   |
| F 30      1      10    |                                                     S                                             |
| S 31      1      13    |                                    I      H                                                       |
------------------------------------------------------------------------------------------------------------------------------
LEGEND :     H FOR HARDWARE
             S FOR SOFTWARE                      STATISTICS
             O FOR OPERATIONAL
             U FOR UNEXPLAINED
             I FOR LATE IPL
                                             TOTAL SCHEDULED HOURS OF PRODUCTION :  380
                                             TOTAL DOWNTIME (MN)   :  378 . AVG/DAY :  17.18 . AVG/PROD HOUR :   0.36
                                             TOTAL REIPL'S         :   19 . AVG/DAY :   0.86
                                             DOWNTIME RATE IS      :  1.66 PERCENT OF SCHEDULED PRODUCTION HOURS
```

INTERACTIVE SYSTEMS RELIABILITY

The uptimes achieved for the month of August for each of APL, ATS and CPS were 95.76%, 95.36% and 95.08% of scheduled operation, respectively. The scheduled hours of operation during the month of August totalled 473.5 and the number of unscheduled IPL's per day was 1.32. In addition to scheduled time, APL, ATS and CPS were also available for approximately 129 hours of unattended weekend operation.

Due to hardware problems with the multiplexor channel, Interactive Terminal Systems experienced an excessive amount of downtime during August. The intermittent channel problems continued from August 1 until August 23 when they were resolved by replacing a card in 3705 which controls tag and I/O operations. In addition, some interface problems caused the system to hang. These were overcome by changing a relay card in the 2821 control unit. Local power supply was also replaced in the multiplexor channel as the circuit breakers tripped on several occasions. In addition, 135 minutes were lost on August 10 due to an operator error.

The percentage breakdown of total system downtime was: HARDWARE - 1291 minutes (86.47%), SOFTWARE - 35 minutes (2.34%), OTHER - 167 minutes (11.19%). Forty-one unscheduled IPL's were required as a result of the failures.

Kam Jain

ATS REPORTQ

In response to user requests, two new report commands have been added to ATS: a "reportq" command for ATS documents and a corresponding "*reportq" command for ATS/RJE output. The new commands may be used to obtain a brief report on the contents of permanent storage. The results from "reportq" or "*reportq" are not retained in working storage and so no clearing of working storage is required prior to issuing either command. The printout may be interrupted with the ATTN key at any time.

As with the standard report commands, a selector phrase may (optionally) be used to select only names containing specific characters.

Examples:

```
reportq
GEN INF SMRY A
GEN INF SMRY B
NEWS
bbox
NEWSLETTER
ATS DEMO


*reportq
R0000202, 74.048, 14:50
R0000265, 74.064, 10:16
XFR0309, 74.065, 18:03
R0000210, 74.066, 13:15


*reportq;XFR
XFR0309, 74.065, 18:03
```

Sam Goldfarb

XFR UTILITY SUBMISSION FROM APL

There now exists a facility to submit card images for executing the Batch OS Transfer Utility (see USERBOOK 4.3140) from within an APL function.

To obtain a complete description of how to use this facility, type:

```
)LOAD 1 XFR
HOW
```

The first part of the listing explains how the function SETUP may be employed to aid the user in creating the necessary n x 80 character matrix of card images. The second part explains how to use the function SUBMIT for submission of the n x 80 matrix into a file (queue). The card images will subsequently be transmitted to HASP (on a first-in-first-out basis) for execution. Card images will be submitted to the S/370 or S/360 machines in accordance with user specifications.

Further inquiries should be directed to the Interactive Systems Group at 928-2225.

Ron Thompson

"DATATALK" DURING UTCC OPEN HOUSE

During the recent UTCC Open House, DATATALK made two presentations in which DATATALK programmer/operators were on hand to discuss, describe and answer questions about DATATALK services. Also presented were magnetic tape recordings of actual and simulated sample DATATALK sessions, prepared with the help of UTCC's Don Gibson and the Media Centre's Ted Glickman.

Anyone who missed these sessions, and who would like to learn about DATATALK, can call us at 928-6710.

Ernst Goetze

DATATALK AND APL

There are many sources of information on the programming language APL and the APL*PLUS implementation available at UTCC. These include:

1. The UTCC USERBOOK Section 4. Topic 4.2030 in Section 4 contains a comprehensive list of available reference texts, including the IBM APL/360 User's Reference Manual.

2. The facilities of UTCC's Interactive Terminal Systems group, including the APL operator (928-7107).

3. On-line commands)OPR and)OPRN.

4. On-line reports available in the workspaces 1 NEWS and 1 HOTNEWS.

5. A comprehensive listing of the contents of the APL public libraries supported at UTCC, available at the Information Office, SF128.

DATATALK would now like to add its services to these reference and advisory sources. Its programmer/operators can provide a fund of information on APL, the UTCC implementation of APL*PLUS, the public libraries and, of course, the applications software available in DATATALK workspaces.

cont'd...

DATATALK AND APL Cont'd...

Along with its other services, DATATALK is prepared to give advice, check out syntax, etc. and exchange APL programming information. Call 928-6710 any weekday from 10 a.m. to 10 p.m. for information about any of the above, for a copy of the pocket-sized folder on APL transmission codes and the dyadic I-beams or for a DATATALK telephone sticker.

Ernst Goetze

DATATALK DIALOGUES

Each month in COMPUTERNEWS, DATATALK will be featuring one or more "dialogues", derived from actual or simulated DATATALK telephone sessions, to illustrate some aspect of DATATALK services that might otherwise not come to the user's attention.

Last month, the dialogue discussed least squares as applied to reconciling measurements. This month, it will deal with a linear dependence problem. Users who would like back copies or who would like to suggest a topic for a dialogue, can call 928-6710.

DIALOGUE: A Problem of Rank (or Linear Dependence)

DATATALK: Hello. University of Toronto DATATALK, Ernst Goetze speaking.
HARVEY: Hello Ernst. This is Bernard Harvey. I have a matrix problem. I have these five simultaneous equations, or rather a system of such equations, but I'm not certain whether any of them are redundant.
D: Then what you want is the rank of the matrix?
H: Yes. That'll tell me if they're all independent.
D: Could you read me the first row of the matrix?
H: 1.02, 2.03, 4.20, 6.63, 10.21
D: OK. The second row?
H: -1.25, -2.35, -4.64, -7.59, -12.39
D: The ...
H: The third row is: 0.45, 0.62, 0.91, 1.93, 4.40
The fourth row: -1.17, -1.96, -3.46, -6.21, -11.71
The fifth row: 0.44, 0.61, 0.89; 1.95, 4.41
D: Thank you, Bernie...The rank is 5.
H: Five?
D: Yes, five.

cont'd...

DATATALK DIALOGUE Cont'd...

H: That's peculiar. That matrix is made up of rate coefficients for a differential equation system representing a chemical reaction. I'm very familiar with the reactions and I could swear that the rank shouldn't be more than three.

D: Hmm..Are those values experimental?

H: Yes, but they're pretty accurate. I'm certain they're good to about .01, that is a tenth of one percent of the largest.

D: Well, the thing is that the rank calculation expects truly exact values. There's something else we could try though.

H: Yes?

D: Well, if we examine the eigenvalues of the matrix and some of the them are really small compared to the others, that would indicate that some of the equations really aren't linearly independent of the others, except for experimental tolerance.

H: Oh? But can you do that on the telephone? It seems like a lot of programming...

D: No problem. The routine is pre-programmed, and I just have to call it out of one of our workspaces. OK. The eigenvalues are: 3.879, -2.319, -0.0155, -0.0308, and 0.0364. So, if we assume some small error in the matrix coefficients,...

H: I could conclude that the rank is two, since there are those two large eigenvalues and all the others are pretty small.

D: Yes. The other three are near zero and about one-hundredth of the first two.

H: Yes. That's alright. It makes sense and agrees better with my expectations. One other thing.

D: Yes?

H: Do you think you could eliminate the redundant equations?

D: You mean row-reduce it?

H: Yes. And keep track of the intermediate results.

D: OK. Let's see. If we always pivot on the largest element, I should start with the -12.39, and...

H: Can you just finish it later and mail it to me?

D: Certainly.

H: It must be nice to have a computer. I tried to do it manually this morning, but it just isn't my day. But I think we're right with a rank of two and that calculation will just serve as confirmation.

D: OK, Bernie I'll get it to you today. Thanks for calling.

Ernst Goetze

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Confirmation of course(s) will be sent to the above address along with the room number in which the course will meet.

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- 12 disk drives (3330)
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- 6 printers
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- 1 paper tape reader
- Calcomp plotters (11" and 30")
- Gould plotter (11")
- OS/MVT with HASP

SYSTEM/360 MODEL 65

- located in McLennan Physical Laboratories
- provides Interactive Systems Service
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- 1 card punch
- 140 typewriter terminals
- OS/MVT with APL, ATS, and CPS

7094 II

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